

CLAIMS

1. Use of a nucleic acid sequence encoding an enzyme catalysing the transfer of a fatty acid from acyl-CoA to diacylglycerol for the production of triacylglycerol (TAG) by genetic transformation of an oil-producing organism with said sequence in order to be expressed in this organism and result in an active enzyme in order to increase the oil content of the organism.
2. Use according to claim 1, wherein said nucleic acid sequence is derived from the sequence shown in SEQ ID NO. 1.
3. Use according to claims 1 or 2, wherein said sequence is derived from the *Saccharomyces cerevisiae ARE1* gene (genomic clone or cDNA).
4. Use according to claims 1, 2 or 3, wherein a nucleic acid sequence or cDNA is used that contain nucleotide sequences coding for a protein with an amino acid sequence that is 60% or more identical to the amino acid sequence as presented in SEQ. ID. NO. 2.
5. Transgenic organisms comprising, in their genome or on a plasmid, a nucleic acid sequence according to claim 1, 2, 3 or 4, transferred by recombinant DNA technology.
6. Transgenic organisms according to claim 5, which are selected from the group consisting of fungi, plants and animals.
7. Transgenic organisms according to claim 6, which are selected from the group of agricultural plants.
8. Transgenic organisms according to claim 7 which are selected from the group of agricultural plants and where said nucleotide sequence is expressed under the control of a storage organ specific promoter.
9. Transgenic organisms according to claim 8 which are selected from the group of agricultural plants and where said nucleotide sequence is expressed under the control of a seed-specific promoter.

10. Oils from organisms according to claims ~~5-9~~.
11. A protein encoded by a DNA molecule according to SEQ ID NO. 1 or a functional (enzymatically active) fragment thereof.
12. A protein produced in an organism as specified in ~~any of the claims 5-9~~, which has the amino acid sequence set forth in SEQ ID NO. 2 or an amino acid sequence with at least 60 % homology to said amino acid sequence.
13. A protein as specified in claims ~~11 or 12~~ that is isolated from *Saccharomyces cerevisiae*.
14. Use of a protein as specified in claim 11, ~~12 or 13~~ in the production of triacylglycerols.
15. Triacylglycerols according to claim 14.

add

[illegible]